PB-240 335

LOWER ST. REGIS LAKE, FRANKLIN COUNTY, NEW YORK

Pacific Northwest Environmental Research Laboratory

Prepared for:

National Environmental Research Center, Las Vegas, Nevada
National Environmental Research Center, Corvallis, Oregon
New York National Guard
New York State Department of Environmental Conservation

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16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivded according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
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REPORT

ON

LOWER ST. REGIS LAKE

FRANKLIN COUNTY

NEW YORK

EPA REGION II

WORKING PAPER No. 162

WITH THE COOPERATION OF THE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AND THE

NEW YORK NATIONAL GUARD

DECEMBER, 1974

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the New York Department of Environmental Conservation for professional involvement and to the New York National Guard for conducting the tributary sampling phase of the Survey.

Henry L. Diamond, Commissioner of the New York Department of Environmental Conservation, and Leo J. Hetling, Director, and Italo G. Carcich, Senior Sanitary Engineer, Environmental Quality Research, Department of Environmental Conservation, provided invaluable lake documentation and counsel during the Survey.

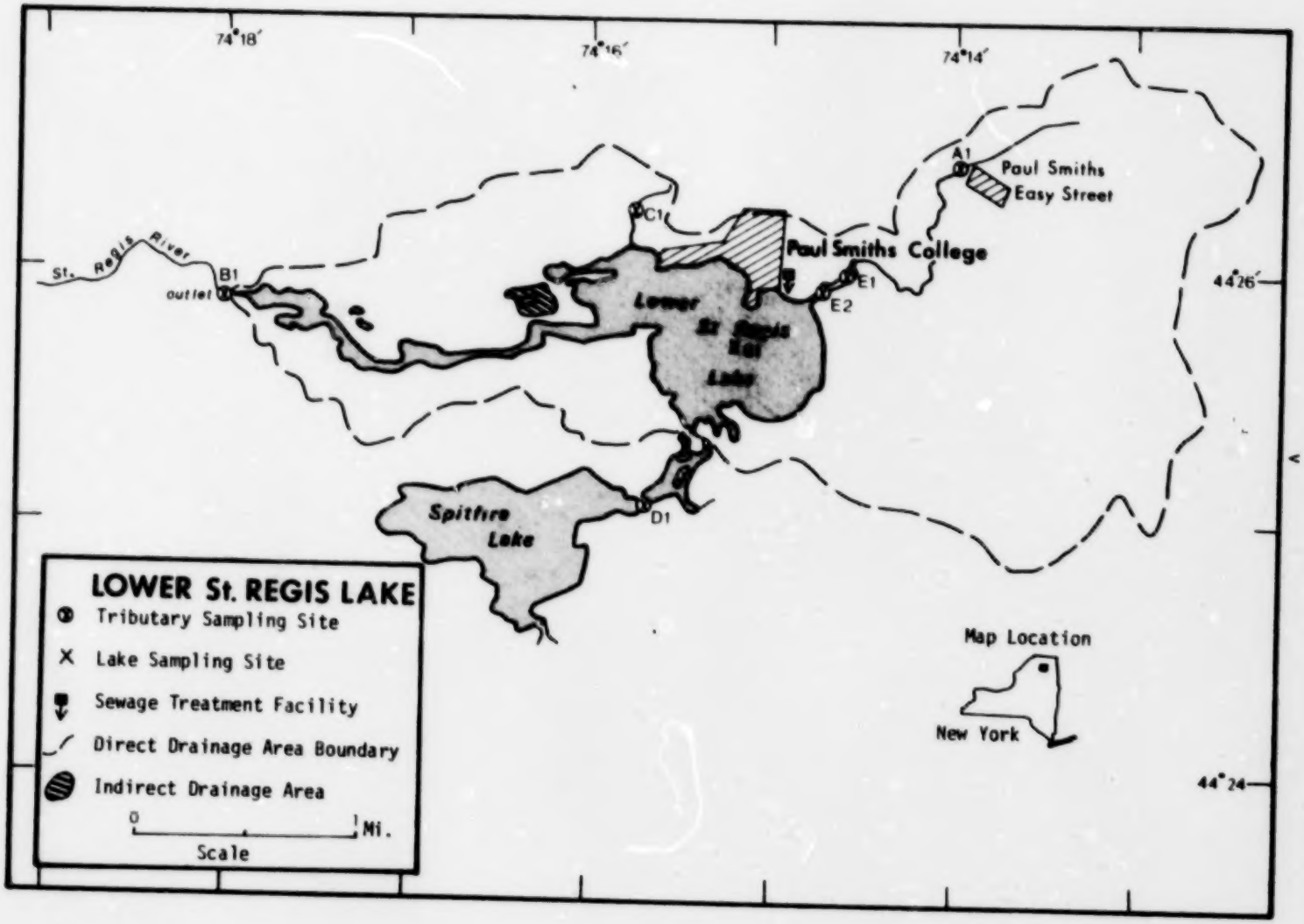
Major General John C. Baker, the Adjutant General of New York, and Project Officer Lieutenant Colonel Fred Peters, who directed the volunteer efforts of the New York National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF NEW YORK

LAKE NAME	COUNTY
Allegheny Reservoir	Cattaraugas, NY; McLean, Warren, PA
Black	St. Lawrence
Canadaigua	Ontario
Cannonsville	Delaware
Carry Falls	St. Lawrence
Cassadaga	Chautauqua
Cayuga	Seneca, Tompkins
Champlain	Clinton, Essex, NY; Addison, Chittenden, Franklin, VT
Chautauqua	Chautauqua
Conesus	Livingston
Cross	Cayuga, Onondaga
Goodyear	Otsego
Huntington	Sullivan
Keuka	Ontario
Long	Hamilton
Lower St. Regis	Franklin
Otter	Cayuga
Owasco	Cayuga
Raquette Pond	Franklin
Round	Saratoga
Sacandaga Res.	Fulton, Saratoga
Saratoga	Saratoga
Schroon	Essex, Warren
Seneca	Seneca, Schyler, Yates
Swan	Sullivan
Swinging Bridge Res.	Sullivan


74°18'
74°16'
74°14'
44°26'
44°24'
A1
Paul Smiths
Easy Street
C1
Paul Smiths College
St. Regis River
outlet
B1
E1
E2
Lower St Regis Lake
Spitfire Lake
D1
LOWER St. REGIS LAKE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Direct Drainage Area Boundary
Indirect Drainage Area
0
1 Mi.
Scale
Map Location
New York

LOWER ST. REGIS LAKE

STORET NO. 3640

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate Lower St. Regis Lake is eutrophic. Of the 26 New York lakes sampled in the fall when essentially all were well-mixed, 17 had less mean total phosphorus, 10 had less mean dissolved phosphorus, and eight had less mean inorganic nitrogen. For all data, 21 lakes had less mean chlorophyll a, and 17 had greater Secchi disc transparency.

Near-depletion of dissolved oxygen with depth occurred at station 1 in July, 1972.

B. Rate-Limiting Nutrient:

A significant loss of phosphorus occurred in the algal assay sample from the time of collection to the time the assay was begun, and the results are not indicative of lake conditions at the time of sampling.

The lake data indicate phosphorus limitation at all sampling times.

C. Nutrient Controllability:

1. Point sources--During the sampling year, Lower St. Regis Lake received a total phosphorus load at a rate about equal to that proposed by Vollenweider (in press) as "permissible"; i.e.,

an oligotrophic rate (see page 12). Of that load, it is calculated that Paul Smith College contributed about 12%.

Personnel of the New York Department of Environmental Conservation advise that chemical phosphorus removal was begun at the College on July 1, 1972, and that 100% removal would be achieved in May, 1974, by means of effluent recharge sand beds (Tofflemire, 1974).

Complete removal of the College phosphorus load should reduce the loading rate to about 3.2 lbs/acre/yr or 0.36 g/m^2/ year. This is les than Vollenweider's proposed oligotrophic rate and should result in a significant improvement of the trophic condition of the lake.

2. Non-point sources (see page 12)--During the sampling year, the phosphorus export of the Unnamed Creek (C-1) was similar to exports of unimpacted New York streams studied elsewhere. However, the phosphorus export of Easy Street Creek was nearly three times that of the Unnamed Creek and indicates unknown and unmeasured point sources such as septic tanks.

In all, non-point sources are estimated to have contributed about 86% of the total phosphorus load to the lake during the sampling year.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

A. Lake Morphometry†:

1. Surface area: 461 acres.
2. Mean depth: 16.8 feet.
3. Maximum depth: 36 feet.
4. Volume: 7,736 acre/feet.
5. Mean hydraulic retention time: 110 days.

B. Tributary and Outlet:
(See Appendix A for flow data)

1. Tributaries -

Name	Drainage area*	Mean flow*
Unnamed Creek (C-1)	3.0 mi^2	4.9 cfs
Easy Street Creek (E-1)	0.8 mi^2	1.3 cfs
Minor tributaries & immediate drainage -	16.7 mi^2	29.1 cfs
Totals	20.5 mi^2	35.3 cfs

2. Outlet -

St. Regis River	21.2 mi^2**	35.3 cfs

C. Precipitation***:

1. Year of sampling: 42 inches.
2. Mean annual: 32 inches.

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† Anonymous, ND.

* Drainage areas are accurate within ±5%; except for small basins (±10%); mean daily flows are accurate within ±5 to 25%; and normalized mean monthly flows are accurate within ±15%.

** Includes area of lake.

*** See Working Paper No. 1, "Survey Methods".

III. LAKE WATER QUALITY SUMMARY

Lower St. Regis Lake was sampled three times during the open-water season of 1972 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a single station on the lake and from a number of depths (see map, page v). During each visit a single depth-integrated (15 feet to surface) sample was collected for phytoplankton identification and enumeration; and during the last visit, a single five-gallon depth-integrated sample was taken for algal assays. Also each time, a depth-integrated sample was collected for chlorophyll *a* analysis. The maximum depth sampled was 30 feet.

The results obtained are presented in full in Appendix B, and the data for the fall sampling period, when the lake essentially was well-mixed, are summarized below. Note, however, the Secchi disc summary is based on all values.

For differences in the various parameters at the other sampling times, refer to Appendix B.

A. Physical and chemical characteristics:

Parameter	Minimum	Mean	Median	Maximum
		FALL VALUES (10/10/72)		
Temperature (Cent.)	10.9	11.1	11.1	11.2
Dissolved oxygen (mg/l)	7.6	7.8	7.8	8.0
Conductivity (µmhos)	50	50	50	50
pH (units)	6.8	6.9	6.9	7.0
Alkalinity (mg/l)	10	10	10	12
Total P (mg/l)	0.022	0.060	0.026	0.165
Dissolved P (mg/l)	0.008	0.010	0.010	0.013
NO_2 + NO_3 (mg/l)	0.040	0.050	0.040	0.070
Ammonia (mg/l)	0.170	0.190	0.200	0.220
		ALL VALUES		
Secchi disc (inches)	35	49	48	64

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Number per ml
05/20/72	1. Dinobryon	1,458
	2. Flagellates	614
	3. Melosira	193
	4. Polycystis	144
	5. Cyclotella	144
	Other genera	387
	Total	2,940
07/25/72	1. Dinobryon	3,906
	2. Polycystis	579
	3. Chroococcus	271
	4. Melosira	253
	5. Cyclotella	217
	Other genera	506
	Total	5,732
10/10/72	1. Fragilaria	1,205
	2. Anabaena	964
	3. Stephanodiscus	858
	4. Melosira	843
	5. Flagellates	572
	Other genera	1,115
	Total	5,557

2. Chlorophyll *a* -
(Because of instrumentation problems during the 1972 sampling, the following values may be in error by plus or minus 20 percent.)

Sampling Date	Station Number	Chlorophyll *a* (µg/l)
05/20/72	01	3.0
07/25/72	01	3.4
10/10/72	01	17.3

C. Limiting Nutrient Study:

Because of a 77% loss of the phosphorus in the assay sample from the time of collection to the time the assay was begun, the results are not indicative of conditions in the lake at the time of sampling.

The lake data indicate phosphorus limitation at all sampling times. Nitrogen-to-phosphorus ratios were 24 to 1 or greater and phosphorus limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix C for data)

For the determination of nutrient loadings, the New York National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff month of May when two samples were collected. Sampling was begun in November, 1972, and was completed in October, 1973.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the New York District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated by using the nutrient loads, in lbs/mi^2/year, at station C-1 and multiplying by the ZZ area in mi^2.

The phosphorus loading for the Paul Smith College wastewater treatment plant is based on data provided by T. J. Tofflemire (1974) of the New York Department of Environmental Conservation. The nitrogen loading is estimated at 7.5 lbs/capita/year.

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* See Working Paper No. 1.

A. Waste Sources:

1. Known municipal* -

Name	Pop. Served	Treatment	Mean Flow (mgd)	Receiving Water
Paul Smith College	1,000	sand beds (P-removal)	0.036	Lower St. Regis Lake

2. Known industrial - None

* Tofflemire, op. cit.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	lbs P/ yr	% of total
a. Tributaries (non-point load) -		
Unnamed Creek (C-1)	190	11.3
Easy Street Creek (E-1)	130	7.7
b. Minor tributaries and immediate drainage (non-point load) -	1,060	63.1
c. Known municipal -		
Paul Smith College	210	12.5
d. Septic tanks* -	20	1.2
e. Known industrial - None	-	-
f. Direct precipitation** -	70	4.2
Total	1,680	100.0

2. Outputs -

Lake outlet - St. Regis River 1,500

3. Net annual P accumulation - 180 pounds

* Based on 30 shoreline dwellings; see Working Paper No. 1.
** See Working Paper No. 1.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	lbs N/yr	% of total
a. Tributaries (non-point load) -		
Unnamed Creek (C-1)	8,930	12.0
Easy Street Creek (E-1)	3,010	4.0
b. Minor tributaries & immediate drainage (non-point load) -	50,000	67.0
c. Known municipal -		
Paul Smith College	7,500	10.1
d. Septic tanks* -	700	0.9
e. Known industrial - None	-	-
f. Direct precipitation** -	4,440	6.0
Total	74,580	100.0

2. Outputs -

Lake outlet - St. Regis River 58,560

3. Net annual N accumulation - 16,020 pounds

* Based on 30 shoreline dwellings; see Working Paper No. 1.
** See Working Paper No. 1.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	lbs P/mi^2/yr	lbs N/mi^2/yr
Unnamed Creek (C-1)	63	2,976
Easy Street Creek (E-1)	162	3,762

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (in press). Essentially, his "dangerous" rate is the rate at which the receiving waters would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

Units	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
lbs/acre/yr	3.6	0.4	162.8	34.8
grams/m^2/yr	0.41	0.04	18.1	3.9

Vollenweider loading rates for phosphorus (g/m^2/yr) based on mean depth and mean hydraulic retention time of Lower St. Regis Lake:

"Dangerous" (eutrophic rate)	0.80
"Permissible" (oligotrophic rate)	0.40

V. LITERATURE REVIEWED

Anonymous, (no date). Memorandum on Lower St. Regis Lake. Env. Health Ctr., NY State Dept. of Health, Albany.

Anonymous, 1972. "Investigation of Upper Saranac and Lower St. Regis Lake". Spec. Inv. No. 1/72, Env. Health Ctr., NY State Dept. of Health, Albany.

Allen, Susan (Aquatic Biology Unit), 1970. Memo to Dr. G. W. Fuhs concerning survey of Lower St. Regis Lake. Env. Health Ctr., NY State Dept. of Health, Albany.

Tofflemire, Tracy J., 1974. Personal communication (Paul Smith College effluent data and treatment methods). NY Dept. of Env. Cons., Albany.

Vollenweider, Richard A. (in press). Input-output models. Schweiz. A. Hydrol.

VII. APPENDICES

APPENDIX A

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR NEW YORK 11/26/74

LAKE CODE 3440 LOWER ST REGIS LAKE

TOTAL DRAINAGE AREA OF LAKE 21.20

TRIBUTARY	SUB-DRAINAGE AREA	NORMALIZED FLOWS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
3440H1	21.20	29.20	26.60	58.40	101.00	52.53	29.20	17.70	14.20	16.30	23.50	32.30	30.40	35.28
3440C1	2.97	4.10	3.72	7.11	14.20	7.35	4.09	2.47	1.99	2.28	3.29	4.52	4.25	4.94
3440E1	0.74	1.05	0.95	1.42	3.63	1.88	1.05	0.63	0.51	0.58	0.84	1.16	1.09	1.27
344077	17.47	24.10	21.90	41.83	83.40	43.20	24.00	14.50	11.70	13.40	19.40	26.60	25.00	29.06

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 21.20
SUM OF SUB-DRAINAGE AREAS = 21.20

TOTAL FLOW IN = 423.57
TOTAL FLOW OUT = 423.70

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3440H1	11	72	45.00	4	67.00				
	12	72	80.40	2	76.00				
	1	73	87.90	6	109.00				
	2	73	71.50	3	360.00				
	3	73	108.00	4	89.00	31	53.00		
	4	73	89.80	21	60.00				
	5	73	56.30	7	56.50	19	104.00		
	6	73	53.30	2	70.00				
	7	73	18.60	14	28.00				
	8	73	12.40	19	29.80				
	9	73	25.40	9	33.70				
	10	73	21.20	13	32.00				
3440C1	11	72	6.30	4	1.52				
	12	72	11.30	2	1.72				
	1	73	12.30	6	2.46				
	2	73	10.00	3	8.12				
	3	73	15.20	4	2.00	31	37.40		
	4	73	12.60	21	6.62				
	5	73	9.29	7	4.96	19	20.00		
	6	73	7.47	2	9.20				
	7	73	3.59	14	0.46				
	8	73	1.77	19	0.44				
	9	73	3.55	9	1.12				
	10	73	2.94	13	0.90				

TRIBUTARY FLOW INFORMATION FOR NEW YORK 11/26/74

LAKE CODE 3640 LOWER ST REGIS LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3640F1	11	72	1.62	4	1.45				
	12	72	2.89	2	1.64				
	1	73	3.14	6	2.35				
	2	73	2.56	3	7.99				
	3	73	3.88	4	1.97	31	1.67		
	4	73	3.23	21	2.11				
	5	73	2.37	7	1.89	19	5.61		
	6	73	1.92	2	2.69				
	7	73	0.66	14	0.53				
	8	73	0.45	19	0.59				
	9	73	0.91	9	0.72				
	10	73	0.76	13	0.67				
3640Z2	11	72	37.10	4	34.20				
	12	72	56.20	2	38.80				
	1	73	72.50	6	55.50				
	2	73	58.90	3	184.00				
	3	73	89.10	4	45.40	31	38.30		
	4	73	74.20	21	48.50				
	5	73	54.50	7	43.40	19	129.00		
	6	73	43.80	2	63.40				
	7	73	15.20	14	12.50				
	8	73	10.40	19	13.90				
	9	73	20.90	9	17.10				
	10	73	17.50	13	15.80				

APPENDIX B

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 74/11/26

364001
44 25 00.0 074 20 00.0
LOWER ST REGIS
36033 NEW YORK

11EPALES 2111202
6 0020 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/20	11	35 0000	13.9	11.7	64	50	6.40	10K	0.190	0.130	0.022	0.011
	11	35 0011	7.1	9.9		50	6.30	10K	0.260	0.080	0.022	0.011
	11	35 0021	6.0	9.2		50	6.50	10K	0.250	0.210	0.027	0.009
72/07/25	14	50 0000			48	50K	7.80	11	0.060	0.140	0.017	0.007
	14	50 0004	23.0	7.2		50K	7.70	12	0.070	0.150	0.020	0.008
	14	50 0015	16.0	4.0		50K	7.30	13	0.090	0.120	0.011	0.008
	14	50 0022	7.1	0.6		50K	6.90	16	0.100	0.460	0.048	0.012
72/10/10	12	00 0000			35	50K	6.95	11	0.050	0.180	0.022	0.008
	12	00 0004	11.2	8.0		50K	6.90	10K	0.040	0.170	0.023	0.009
	12	00 0015	11.1	7.8		50K	6.90	10K	0.040	0.190	0.029	0.012
	12	00 0030	10.9	7.6		50K	6.80	12	0.070	0.220	0.165	0.013

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/20	11	35 0000	3.0J
72/07/25	14	50 0000	3.4J
72/10/10	12	00 0000	17.3J

K VALUE KNOWN TO BE LESS THAN INDICATED

J VALUE KNOWN TO BE IN ERROR

APPENDIX C

TRIBUTARY DATA

STORET RETRIEVAL DATE 74/11/26

3640A1 LS3640A1
44 26 00.0 074 15 00.0
UNNAMED CREEK
36051 15 SARANAC
T/LOWER ST REGIS LAKE
ST HWY 192 BRDG
11EPALES
4
2111204
0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	10 15		0.270	0.210	0.036	0.005K	0.013
72/12/02	07 30		0.336	0.230	0.019	0.005K	0.013
73/01/06	09 30		0.360	0.250	0.016	0.005K	0.010
73/02/03	09 00		0.290	0.180	0.024	0.011	0.015
73/03/04	08 30		0.350	0.100K	0.019	0.005K	0.005K
73/04/21	13 00		0.260	0.360	0.032	0.005K	0.010
73/05/07	09 30		0.250	0.230	0.018	0.005K	0.010
73/05/19	09 30		0.154	1.100	0.036	0.005K	0.010
73/06/02	11 30		0.231	0.210	0.028	0.009	0.010
73/07/14	09 00		0.130	2.400	0.058	0.012	0.035
73/08/19	14 00		0.240	0.440	0.036	0.007	0.010
73/09/09	13 15		0.252	0.675	0.220	0.007	0.015
73/10/13	13 30		0.240	0.630	0.190	0.006	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

364081 LS364081
44 26 00.0 074 18 00.0
ST REGIS RIVER
36 15 ST REGIS
O/LOWER ST REGIS LAKE
BRDG NEAR ST REGIS CHURCH
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	12 05		0.074	0.490	0.147	0.005K	0.018
72/12/02	08 30		0.071	0.890	0.132	0.005K	0.022
73/01/06	10 40		0.126	0.380	0.100	0.005K	0.015
73/02/03	11 40		0.210	0.350	0.063	0.007	0.010
73/03/04	09 10		0.250	0.220	0.048	0.011	0.015
73/04/21	13 30		0.198	0.340	0.026	0.005K	0.015
73/05/07	10 05		0.075	0.500	0.009	0.005K	0.020
73/05/19	09 40		0.096	0.720	0.039	0.008	0.015
73/06/02	11 50		0.035	0.610	0.009	0.005K	0.015
73/07/14	09 30		0.014	0.760	0.027	0.006	0.025
73/08/19	13 20		0.010K	1.980	0.099	0.009	0.050
73/09/09	14 00		0.017	1.600	0.360	0.005K	0.025
73/10/13	14 15		0.010K	0.900	0.084	0.005K	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640C1 LS3640C1
44 26 30.0 074 16 00.0
UNNAMED CREEK
36 15 ST REGIS
T/LOWER ST REGIS LAKE
BRDG W OF PAUL SMITHS COLLEGE
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	12	15	0.039	0.420	0.046	0.005K	0.015
72/12/02	08	00	0.037	0.440	0.060	0.005K	0.017
73/01/06	10	00	0.095	0.750	0.100	0.005K	0.015
73/02/03	10	00	0.115	0.460	0.088	0.007	0.015
73/03/04	10	30	0.110	0.420	0.135	0.008	0.015
73/04/21	14	00	0.020	0.460	0.005K	0.005K	0.015
73/05/07	10	20	0.010K	0.350	0.010	0.005K	0.020
73/05/19	10	10	0.036	2.600	0.086	0.005K	0.015
73/06/02	12	20	0.014	0.630	0.013	0.005K	0.020
73/07/14	10	15	0.048	1.900	0.066	0.006	0.025
73/08/19	13	15	0.010K	0.610	0.034	0.009	0.025
73/09/09	14	20	0.017	0.840	0.250	0.005K	0.025
73/10/13	14	00	0.010K	1.440	0.110	0.005K	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640D1 LS3640D1
44 25 00.0 074 15 30.0
UNNAMED STREAM
36 15 ST REGIS
T/LOWER ST REGIS LAKE
ALONG RD OFF ST HWY 10
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	12 55		0.039	0.310	0.042	0.005K	0.015
72/12/02	11 30		0.030	1.230	0.094	0.005K	0.022
73/01/06	10 40		0.082	0.400	0.120	0.005K	0.015
73/02/03	13 00		0.370	0.270	0.088	0.005K	0.005K
73/03/04	11 00		0.154	0.340	0.038	0.005K	0.005K
73/04/21	15 07		0.130	0.880	0.017	0.005K	0.010
73/05/07	11 50		0.058	0.580	0.018	0.005K	0.015
73/05/19	10 45		0.054	1.200	0.035	0.005K	0.015
73/06/02	13 40		0.040	0.540	0.009	0.009	0.010
73/07/14	12 30		0.029	1.540	0.042	0.005K	0.015
73/08/19	12 15		0.010K	0.100K	0.013	0.005K	0.010
73/09/09	15 25		0.010K	0.440	0.115	0.005K	0.010
73/10/13	16 10		0.176	0.480	0.052	0.009	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640E1 LS3640E1
44 26 00.0 074 15 00.0
OSGOOD POND OUTLET
36 15 ST REGIS
T/LOWER ST REGIS LAKE
ST HWY 10 BRDG BELO PAUL SMITH CLG STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	11 30		0.221	0.720	0.300	0.017	0.085
72/12/02			0.240	0.540	0.240	0.015	0.050
73/02/03	13 30		0.350	2.400	0.065	0.034	0.050
73/03/04	13 10		0.290	0.600	0.370	0.092	0.115
73/04/21	14 35		0.150	1.700	0.070	0.019	0.075
73/05/07	11 10		0.132	1.050	0.440	0.021	0.055
73/05/19	11 30		0.048	0.370	0.021	0.005K	0.010
73/06/02	12 40		0.120	0.660	0.024	0.006	0.010
73/07/14	11 20		0.190	1.680	0.082	0.008	0.040
73/08/19	12 45		0.180	0.720	0.048	0.009	0.035
73/09/09	15 10		0.189	0.860	0.252	0.008	0.035
73/10/13	15 10		0.168	0.780	0.042	0.008	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640E2 LS3640E2
44 26 00.0 074 14 30.0
OSGOOD POND OUTLET
36 15 SARANAC
T/LOWER ST REGIS
RD OFF ST HWY 192 ABOV PAULSMITH CLG STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	11 45		0.200	0.280	0.064	0.005K	0.012
72/12/02	09 10		0.252	0.200	0.035	0.005K	0.015
73/02/03	12 20		0.240	0.300	0.040	0.011	0.020
73/03/04	12 20		0.294	0.140	0.046	0.009	0.010
73/04/21	14 20		0.150	2.520	0.064	0.005K	0.010
73/05/07	10 40		0.140	0.210	0.016	0.005K	0.010
73/05/19	10 30		0.058	2.400	0.074	0.005K	0.015
73/06/02	13 10		0.120	0.580	0.008	0.006	0.010
73/07/14	10 40		0.198	2.700	0.115	0.009	0.040
73/08/19	12 30		0.180	0.560	0.023	0.008	0.030
73/09/09	14 15		0.190	1.050	0.092	0.008	0.035
73/10/13	14 45		0.170	0.540	0.058	0.007	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED